

Title (en)

Optical semiconductor device with a mode converter

Title (de)

Optisches halbleiterbauelement mit einem modenwandler

Title (fr)

Composant optique à semi-conducteur comportant un adaptateur de mode

Publication

EP 1005120 A1 20000531 (FR)

Application

EP 99402900 A 19991122

Priority

FR 9814804 A 19981124

Abstract (en)

The device includes both active and passive sections formed on common support within common outer sleeve. The semiconductor optical component comprises a mode adapter. The component comprises an active wave guide (24) and a passive wave guide (22) superimposed on it, both being embedded within a sleeve layer (27). The wave guides are linked by a flared coupling section (SC) in which the width of the active wave guide (24) decreases and the width of the passive wave guide increases. This is followed by a mode expansion section (SE) comprising only the passive wave guide, whose section decreases within this region. The passive wave guide has a thickness between 100 and 200 nanometers.

Abstract (fr)

L' invention concerne un composant optique à semi-conducteur comportant un adaptateur de mode permettant d'assurer le déconfinement du mode optique. Ce composant comporte un guide d'onde actif (24) et un guide d'onde passif (22) superposés et enterrés dans une couche de gaine (27). Il est caractérisé en ce qu'il comprend successivement: une section de couplage évanescent (SC), dans laquelle la largeur du guide d'onde actif (24) décroît et la largeur du guide d'onde passif (22) augmente ; et une section d'expansion de mode (SE) comprenant uniquement le guide d'onde passif (22) dont la largeur décroît. <IMAGE>

IPC 1-7

H01S 5/026; **H01L 33/00**; **H01L 31/0232**; **G02B 6/122**; **G02B 6/13**; **G02B 6/42**

IPC 8 full level

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CPC (source: EP US)

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Citation (search report)

- [A] US 5720893 A 19980224 - BEN-MICHAEL RAFAEL [US], et al
- [A] US 5703974 A 19971230 - SASAKI TATSUYA [JP], et al
- [A] PATENT ABSTRACTS OF JAPAN vol. 097, no. 001 31 January 1997 (1997-01-31)
- [A] KAWANO K ET AL: "COMPARISON OF COUPLING CHARACTERISTICS FOR SEVERAL SPOTSIZE -CONVERTER-INTEGRATED LASER DIODES IN THE 1.3-MUM- WAVELENGTH REGION", IEEE PHOTONICS TECHNOLOGY LETTERS, vol. 9, no. 4, 1 April 1997 (1997-04-01), pages 428 - 430, XP000690456, ISSN: 1041-1135
- [A] LESTRA A ET AL: "MONOLITHIC INTEGRATION OF SPOT-SIZE CONVERTERS WITH 1.3-MUM LASERS AND 1.55-MUM POLARIZATION INSENSITIVE SEMICONDUCTOR OPTICAL AMPLIFIERS", IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS, vol. 3, no. 6, 1 December 1997 (1997-12-01), pages 1429 - 1440, XP000741462, ISSN: 1077-260X
- [A] VUSIRIKALA V ET AL: "1.55-MUM INGAASP-INP LASER ARRAYS WITH INTEGRATED-MODE EXPANDERS FABRICATED USING A SINGLE EXPITAXIAL GROWTH", IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS, vol. 3, no. 6, 1 December 1997 (1997-12-01), pages 1332 - 1343, XP000741453, ISSN: 1077-260X

Cited by

FR2836724A1; DE10201126A1; US6917055B2; US6829276B1; WO03075061A1; WO0139341A3

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